



Pierside Connectivity Notebook

Final

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Revision History

The Revision History table below lists in chronological order each minor revision of this document. A minor revision is defined as a set of changes affecting fewer than 30 percent of the pages in the document.

| -1- Date | -2- Author | -3- Revision Number | -4- Change(s) Made | -5- Affected Page(s) |
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¹**Date:** date of the revision, listed on the cover page (format: MM/DD/YY)

²**Author:** person(s) responsible for revising the document (first and last name)

³**Revision Number:** version number, as listed on the cover page

⁴**Change(s) Made:** list of modifications (e.g., section added, exhibit revised, paragraph deleted, etc.)

⁵**Affected Page(s):** list of pages that were revised (e.g., 1, 2, 4-6, etc.)

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1. PIERSIDE CONNECTIVITY DESCRIPTION

The following sections describe Pierside Connectivity.

1.1 GENERAL

The United States Navy depends on Radio Frequency (RF) links to maintain the required connectivity between a deployed ship or submarine and the supporting Fleet Network Operation Center (NOC). When these ships and submarines come into port, the RF links may be turned off and connectivity to the Fleet NOC or Mini-NOC provided through a Pierside Connectivity network. The USN provides 24x7 support for operational emergencies for secure and non-secure (from UNCLAS to SECRET level) networked connectivity for ships while in port. This network connectivity allows ships to bring down satellite connections and run voice, video and data traffic via a fiber optic or copper umbilical cable linking the ship to the pier. While ships are in port they fall behind the Established Regional Firewalls, thus receiving similar network security services as those provided by the Fleet Network Operations Centers (NOCs), when utilizing the RF transit links. The pier connections are connected to a Network Management System and are monitored for connectivity problems.

Pierside network connectivity is provided at the following bases where existing infrastructure exists and is operational:

- PACIFIC
 - NAVSTA PEARL HARBOR, HI
 - NAVAL AIR STATION NORTH ISLAND, CA
 - NAVSTA SAN DIEGO, CA
 - SUBASE SAN DIEGO FSC, CA
 - NAV WEAP STA SEAL BCH, CA
 - NSWC PORT HUENEME, CA
 - NAVSTA EVERETT, WA
 - TRIDENT REFIT FAC BOS, WA
 - NAVMAG INDIAN ISLAND, WA
 - MANCHESTER FISC, WA
 - PSNS, BREMERTON, WA
 - SUBASE BANGOR FSC, WA
- ATLANTIC
 - NAVSTA NORFOLK, VA
 - NAVAL SHIPYARD NORFOLK, VA
 - NAVPHIBASE LITTLE CREEK, VA
 - NWS YORKTOWN, VA
 - NAVSUBBASE NEW LONDON, CT
 - NAVSTA NEWPORT, RI
 - PORTSMOUTH NSYD PORTS NHNWCF, NH

- NWS CHARLESTON, SC
- SUBASE KINGS BAY, GA
- NAVSTA INGLESIDE, TX
- NAVSTA ROOSEVELT ROADS, PR
- NAVSTA GUANTANAMO BAY, CUBA
- NAVSTA PASCAGULA, MS
- NAVSTA MAYPORT, FL
- NWS EARLE, NJ
- NWS YORKTOWN, CHEATHAM ANNEX, VA

1.2 UMBILICAL CONNECTIONS

The Pierside Connectivity network begins at the pier by connecting the umbilical cable to the ship. Exhibit 1 describes this connectivity. Umbilical cables provide the connectivity between the ship or submarine and the *pier riser* and may be either fiber or copper.

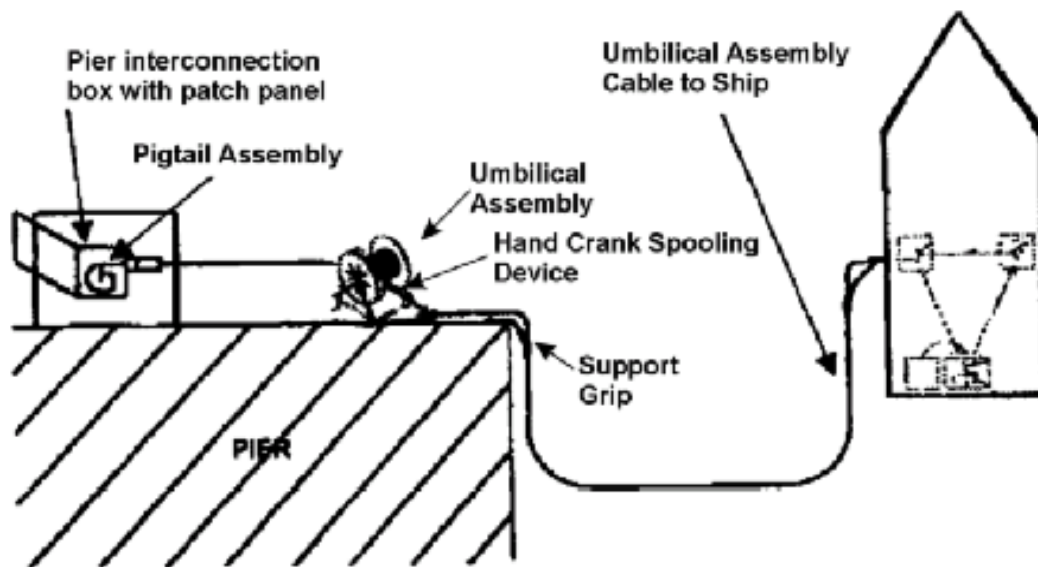


Exhibit 1: Mound to Ship Umbilical Connection

The umbilical cables are stored and maintained at each port facility. Some copper umbilicals may be stored and maintained with the respective ships.

There are two schemes of connectivity that can be provided for the umbilical cable to the ship: over-the-ship and through-the-ship routing

In the first scheme, called over-the-ship cable routing, a separate umbilical assembly is run from the pier to each ship (see Exhibit 2).

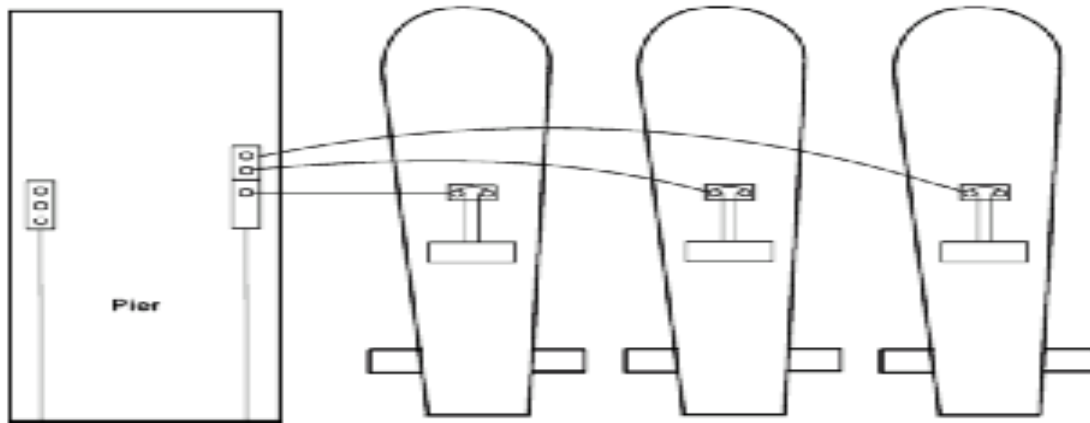


Exhibit 2: Over-the-Ship Cable Routing

The umbilical assembly to the middle ship in the nest is routed over the ship docked at the pier. Similarly, the umbilical assembly to the outermost ship in the nest is routed over the two inner ships.

The over-the-ship cable routing scheme for the umbilical assembly is specified for submarines in a nested configuration. Small surface craft (e.g., patrol boats) may elect to use this routing scheme also. Ships that are nested 2 across where one ship is 12 pins capable and the other is 2 pin capable will also use this configuration.

In the second scheme, called through-the-ship cable routing, an umbilical cable is routed from the pier to the closest ship docked at the pier (See Figure 3).

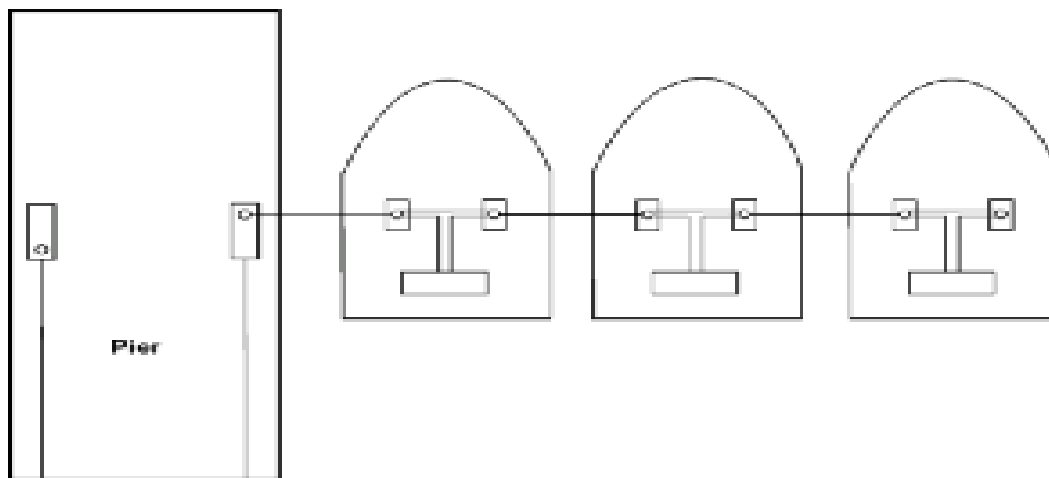


Exhibit 3: Through-the-Ship Cable Routing

A second umbilical assembly is routed from the pierside, docked ship to the middle ship in the nest. A third umbilical assembly is routed from the middle ship to the outermost ship in the nest. Basic connectivity is from pier mound to port connection on 1st ship, then from 1st ship starboard connection to 2nd ship port connection, then from 2nd ship starboard connection to 3rd ship port connection. In a nested configuration orientation, through-the-ship cable routing may

be used for connecting the ships to the pier as long as the port and starboard connections on each ship are fully functional. Crossover cables are not typically used on FFG/DDG/DD/CG/MCM classes of ships if the above configuration is used. Crossover cables are only used on the AOE/LPD/LSD/AGF classes of ships that are moored on their starboard side to the pier. They are not used on the CV/CVN/LHA/LHD/LCC classes of ships.

The through-the-ship cable routing scheme is specified for surface ships in a nested configuration, when all ships are using 12 pin cables.

1.3 NETWORK TOPOLOGY

The Pierside network connectivity is created from attaching the umbilical cable to the Pier interconnection box with the patch panel on the Pier Riser. The Pier Head is the collection/consolidation point for signals coming from the Pier Risers. The number of Pier Heads at each port depends largely on the physical layout of the piers and number of berthing positions. The Pier Head contains the routers, modems, switches and other equipment required to support the transport of the signal from the ship to the NOC. The signals from one or more Pier Heads are consolidated at a base collection point. From there, the consolidated signal is passed to the WAN Point of Presence (POP). The WAN provides the long-haul transport to the supporting Fleet NOC. At some Navy bases, the consolidated signals are terminated at the local Mini-NOC.

Currently, there is no overarching standard for the design and implementation of Navy pierside networks. Some Navy pierside networks support the use of a CSU/DSU while other pierside networks support Time Division Multiplexing (TDM) or Asynchronous Transfer Mode (ATM) technology. In addition, existing Navy pierside network infrastructures may be fiber optic, copper, or a combination of fiber optic and copper media. Surface ships and submarines may require one umbilical connection for all voice, video and data service; or may require three separate umbilical connections: one for voice, one for video and one for data traffic.

Though most Navy pierside network infrastructure equipment is physically located on the Navy bases, some equipment, such as the crypto suite, is physically located aboard the ships and submarines. In addition, some of the Navy pierside network equipment is used jointly to support other programs. The joint use requirements for this equipment varies from site to site.

Battle Force Tactical Training (BFTT) is a simulation/stimulation data stream that is an important tool for the Navy's operational forces. Where it exists, BFTT data is currently transported virtually over the pierside network infrastructure. BFTT currently occupies one set of fiber within an umbilical. Therefore, only two can be connected to the IT21 infrastructure using a through-the-ship umbilical connection.

2. PROCESS SUMMARY

The following subsections describe the process summary.

2.1 PROCEDURES FOR NOTIFICATION OF SHIP ARRIVAL AND UMBILICAL DEPLOYMENT

2.1.1 GENERAL

A Logistics Request (LOGREQ) is a message sent by a ship to inform the appropriate Port Operations (Port Ops) of its intended arrival, departure, or movement, allowing the shore facilities to prepare for the ship's arrival, departure, or in-port movement. The ship normally sends the LOGREQ to Port Ops within 48 hours prior to its movement.

Upon receipt of the LOGREQ, Port Ops will provide unclassified locator and ship movement data to the appropriate Navy support facilities and EDS NMCI personnel.

2.1.2 SOP FOR SHIP ARRIVAL AND UMBILICAL CONNECTION

Messages

LOGREQ message is sent from ship or submarine to Port Ops with Info copy to IT21E/RITSC/NCTAMS LANT JFTOC, etc, and/or BCO. It is recommended that this be done at least 48 hours prior to arrival. In emergency conditions a LOGREQ may not be generated.

Notification

Port Ops posts ship arrival information, and informs the appropriate Navy support facilities (IT21E/RITSC/NCTAMS LANT JFTOC, etc, and/or BCO) and EDS NMCI personnel of expected time of arrival, expected time of connection and pier/berth location.

Preparation

1. Configure logical connections across MAN/BAN.
2. Obtains ship IP address from Ship IP Listing.
3. Confirm the ship's networks are in the firewall's trusted host table.
4. Verify that ship's router configuration has been set for ADNS Pier Connectivity (refer to ADNS Pier Connectivity Router Template), if requested by ship.
5. Assign pier berth IT mooring station location.
6. Prepare and test umbilical cable using Optical Light Source (fiber) or appropriate continuity/line loss tester (copper).
7. Perform necessary PMS (if any) check on pier fiber/copper connection box, including loop back test of pier jack.

Arrival

1. Deliver umbilical to pier, meets ship.

2. Ship: Have a responsible person available at the quarterdeck to meet and assist representative as necessary
3. Ship performs the necessary PMS (if any) on shipboard connector box.
4. Perform any necessary tests to ensure pier head riser connector is operational.
5. Connect the Umbilical Cable to the Pier Head Riser connector; or Navy installs the Umbilical Fiber Cable from the ship's onboard connector to the nested ship's onboard connector.
 - Problem found: If a problem with ship cable entry point is found, contact the ship's representative and the IT21E Help Desk and inform them of the nature of the problem. The IT21E Help Desk and ship personnel will be responsible for resolving the problem. Break fix personnel will stand-by to complete the connection and/or assist in troubleshooting their area of responsibility.
6. Ship's personnel connect Umbilical Cable to the ship's connector.
7. Umbilical operations inform the ship's representative that connection is complete. Umbilical operations will stand by to receive confirmation of connectivity from ship POC.
8. Ship and IT21E will verify connectivity.
 - a. Ping and trace route to ship router interface.
 - b. Telnet port 25 to ship's mail server to verify mail server response.
 - c. Confirm email is flowing (tail the mail logs).
 - d. Confirm with ship that they can web browse (.mil and .com sites).
9. If connectivity cannot be established, inform representative so they can troubleshoot the physical connection.
10. When connectivity is confirmed, inform representative, so they can depart.

2.1.3 SOP FOR SHIP DEPARTURE AND UMBILICAL DISCONNECT

Notification

Port Ops posts ship departure information and informs the appropriate Navy support facilities (IT21E/RITSC/NCTAMS LANT JFTOC, etc, and/or BCO) and EDS NMCI personnel of expected date of departure, expected time of disconnect and pier/berth location.

IP Shift to RF

Ship internally switches the connection path from the umbilical to a Radio Frequency {RF} link.

1. Shift should be conducted within 12 hours prior to underway.
2. IP shift through RF may not occur until umbilical removed.
3. IT21E/RITSC will verify ship RF connectivity.

Departure

1. BCO will transfer phone lines approximately 1 hour prior to underway.

2. SHIP: Have a responsible person available at the quarterdeck to meet and assist representative as necessary.
3. Ship's personnel will disconnect the ship end of the umbilical.
4. Umbilical operator will disconnect the pier end of the umbilical approximately 1 hour prior to underway, at the same time as the removal of other shore services. (Obtain permission from ship's Officer of the Deck prior to disconnect.)
5. Umbilical operator will coil up fiber and return umbilical to storage site.
6. IT21E/RITSC will
 - a. Verify RF connectivity.
 - b. Ping and trace route to ship router interface.
 - c. Telnet port 25 to ship's mail server to verify mail server response.
 - d. Confirm email is flowing (tail the mail logs).
 - e. Confirm with ship that they can web browse (.mil and .com sites).

2.1.4 SOP FOR SHIP IN-PORT MOVEMENT

Notification

Port Ops posts ship disconnect information and informs the appropriate Navy support facilities (IT21E/RITSC/NCTAMS LANT JFTOC, etc, and/or BCO) and EDS NMCI personnel of expected date of disconnect, expected time of disconnect and pier/berth location.

Disconnect

1. BCO will transfer phone lines approximately 1 hour prior to underway.
2. SHIP: Have a responsible person available at the quarterdeck to meet and assist representative as necessary.
3. Ship's personnel will disconnect the ship end of the umbilical.
4. Umbilical operator will disconnect pier end of the umbilical approximately 1 hour prior to underway, at the same time as the removal of other shore services. Obtain permission from ship's Officer of the Deck prior to disconnect.
5. Umbilical operator will coil up fiber and move the umbilical to the destination pier.

Reconnection

1. Umbilical operator delivers umbilical to pier, meets ship.
2. Ship: Have a responsible person available at the quarterdeck to meet and assist representative as necessary.
3. Ship performs the necessary PMS (if any) on shipboard connector box.
4. Umbilical operator performs any necessary tests to ensure pier head riser connector is operational.

5. Umbilical operator connects the Umbilical Cable to the Pier Head Riser connector, or Navy installs the Umbilical Fiber Cable from the ship's onboard connector to the nested ship's onboard connector.
 - Problem found: If a problem with the ship cable entry point is found, contact the ship's representative and the IT21E Help Desk and inform them of the nature of the problem. The IT21E Help Desk and ship personnel will be responsible for resolving the problem. The break fix support teams will stand-by to complete the connection and/or assist in troubleshooting their area of responsibility.
6. Ship's personnel connect Umbilical Cable to the ship's connector.
7. Umbilical operator informs the ship's representative that connection is complete. The umbilical operator will stand by to receive confirmation of connectivity from ship POC.
8. Ship and IT21E will verify connectivity.
 - a. Ping and trace route to ship router interface.
 - b. Telnet port 25 to ship's mail server to verify mail server response.
 - c. Confirm email is flowing (tail the mail logs).
 - d. Confirm with ship that they can web browse (.mil and .com sites).
9. If connectivity cannot be established inform representative so they can troubleshoot the physical connection.
10. When connectivity is confirmed inform representative, so they can depart.

2.2 PROCEDURE FOR PIERSIDE NETWORK TROUBLESHOOTING-PACFLT

2.2.1 GENERAL

Specific troubleshooting guidelines are presented here for major PACFLT/LANTFLT Navy piers sites. More detailed troubleshooting procedures will be included in each site's Pierside SCM.

2.2.2 TROUBLE CALLS

If a ship has been connected to the pier and is experiencing networking connectivity problems (e.g., internet access, email delivery/receipt problems) the ship will call the RITSC Help Desk. RITSC Help Desk can be reached at 545-HELP 24 hours per day.

The ship will need to provide the following:

- Detailed description of problem
- Pier and berth where ships is located
- Type of connection configuration (2 pin/12 pin/dial-up/shipyard)
- Whether NIPR or SIPR or Both

- POC (who has access and passwords to shipboard equipment) and Phone number

If it is determined that transport is the problem, RITSC will call the break fix Help Desk and open a trouble ticket.

If RITSC determines that it is a shipboard issue, the ship will be referred to another Command for assistance:

- NCTS (619)545.6983/8929 – Crypto/keymat/Timeplex/ANC problem
- ADNS Help Desk (619)524.3717 – Responsible for the actual “pier connection” equipment used onboard ship and the fiber cable plant.
- ISNS Help Desk (800) 838.1816 – Responsible for the shipboard networks.
- FTSCPAC Help Desk 619-556-3608 – Responsible for afloat networks.

2.2.3 SOP FOR TROUBLE CALL REPORTING

1. Ship calls RITSC Help Desk 545-HELP
2. RITSC Help Desk logs and triages call
 - a. If call is Telephone problem, call is forwarded to NCTS/BCO
 - b. If call is local computer/server problem, customer is referred to the appropriate command for assistance.
 - c. If call is network connectivity problem, RITSC Help Desk generates ticket
3. RITSC Pierside Engineer contacts Ship’s POC and tries to verify connection to ship router using the cnrsw-fleet-gw-router, cnrsw-fleet-com router and pier switches.
 - RITSC Pierside Engineer will troubleshoot connectivity problem with Ship’s POC. RITSC Pierside Engineer will resolve (if it is a RITSC Network problem) or assist ship in isolating the problem. If problem is isolated to shipboard, ship will be referred to appropriate command for further assistance.
4. Once resolved, RITSC contacts Ship POC and notifies problem has been resolved.
 - a. Ship verifies link status.
 - b. RITSC/ship verify ship’s connectivity to DISN (email and web).
 - i. Ping then trace route to the ship router interface (Use trace route to verify path is from landline and not RF).
 - ii. Telnet port 25 to ship’s mail server to verify mail server response.
 - iii. Confirm with ship that they can web browse (.mil and .com sites).
5. RITSC Engineer closes ticket.

2.3 PROCEDURE FOR PIERSIDE NETWORK TROUBLESHOOTING-LANTFLT

2.3.1 TROUBLE CALLS

If a ship has been connected to the pier and is experiencing networking connectivity problems (e.g., Internet access, email delivery/receipt problems) the ship will verify settings and umbilical cable integrity (copper umbilical only) using shipboard standard operating procedures and configurations contained in CIB 10B (see Appendix A). If unable to correct the problem following these procedures contact the NCTAMS LANT JFTOC Watch Officer at 757-444-2124/4182 or via COMSPOT message. Alternatively, ships can submit information on trouble via the Remedy software via SIPRNET at the URL: helpuar.uar.navy.smil.mil/ars/cgi-bin/arweb.exe.

The ship will need to provide the following:

- Detailed description of problem
- Pier and berth where ship is located
- Type of connection configuration
- POC and phone number

If it is determined that transport is the problem, NCTAMS LANT JFOTC will call the break fix and open a trouble ticket.

Once connectivity has been verified from NCTAMS LANT to the pier riser and connectivity from riser to shipboard CSU/DSU confirmed, outage can be assumed to be caused by faulty or misaligned shipboard equipment. Ship C4 personnel will verify the proper alignment and correct operating characteristics of shipboard installed equipment. If shipboard C4 personnel present cannot verify correct alignment and operating characteristics, senior C4 shipboard personnel should be apprised of difficulties and who will verify correct onboard equipment alignment prior to requesting any off-ship assistance. If senior C4 personnel determine that equipment restoration is beyond the capabilities of the ship technicians, afloat units will request technical assistance from FTSC LANT. Submarines will request technical assistance from their Submarine Squadron Support Unit.

If the break fix group determines the problem is with the Navy-owned copper infrastructure at NS Norfolk or NAB Little Creek, the break fix group will contact NCTAMS LANT for resolution. Site specific telephone contact numbers will be provided in the site specific SCMs.

2.4 PROCEDURE FOR NETWORK BREAK FIX SUPPORT

Break fix support services include local, on-site technical assistance and troubleshooting when problems cannot be resolved using remote diagnostic tools or through phone support at the Navy Fleet NOC. In the event that Equipment must be repaired on-site, the break fix group shall provide repair services through an Equipment manufacturer-approved service center.

Upon receipt of an open trouble ticket, the break fix group will attempt to remotely correct the problem. If the problem is not able to be resolved remotely, the break fix team will be dispatched to find the specific network issue and repair it following the guidelines below.

On-Site Equipment Support Services include the technical diagnosis and repair of defective network components, including the labor and parts required to restore the network component to normal operation. The following are the guidelines for break fix support:

- Return dysfunctional devices to operation according to OEM standards.
- Perform remote diagnostics with the End User when problems are routed to the break fix team.
- Provide necessary parts and labor to repair or restore device to normal operation.
- Perform virus scan as applicable and notification.
- Perform OS update, if required.
- Conduct asset validation; including End User profile updates, device asset tag check and model and serial number check.
- Before an Equipment maintenance request is complete, the break fix group shall advise the Navy of the work performed and provide future avoidance or maintenance tips to prevent additional problems.
- Restore the device to an approved base configuration in the event of repair.
- Provide service personnel who are fully trained and certified by the applicable OEMs.
- Update the asset management database with the correct logistics.
- Conduct ongoing analysis of Equipment maintenance and call history to track service trends.
- Secure base configurations in order to prevent unauthorized software installations.
- Provide configuration as necessary to restore devices to operation.
- Provide electrical and environmental services according to applicable OEM specifications.

3. SERVICE LEVELS AGREEMENTS

Per the NMCI contract, the following SLAs are applicable to Pierside Service Delivery Points (SDPs):

- SLA 24 WAN Network Connectivity.
- SLA 25 BAN/LAN Communication Services.

4. CONTACTS

Randy Brown – Enterprise Pier Support , 808-356-6019